

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Hetzler et al. ) Art Unit: 2672  
Serial No: 09/365,342 ) ) Examiner: Havan, Thu Thao  
Filed: 07/30/1999 ) ) Paper No: 4  
For: METHOD AND APPARATUS FOR ) ) File No: G-305 **RECEIVED**  
ENTITY RELATIONSHIP ) ) Date: March 13, 2003 **MAR 26 2003**  
VISUALIZATION ) )  
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Assistant Commissioner for Patents  
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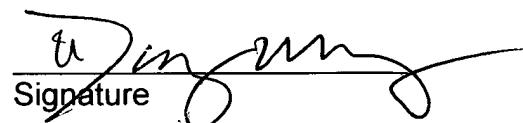
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# FEE TRANSMITTAL

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## Complete if Known

Application Number	09/365,342
Filing Date	07/30/1999
First Named Inventor	Hetzler et al
Examiner Name	Havan, Thu Thao
Group Art Unit	2672
Attorney Docket No.	G-305

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## METHOD OF PAYMENT

1.  The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

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Under 37 CFR 1.16 and 1.17  
 Applicant claims small entity status.  
See 37 CFR 1.27

2.  Payment Enclosed:

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## FEE CALCULATION

## 1. BASIC FILING FEE

Large Entity Small Entity

Fee Code (\$)

Fee Code (\$)

Fee Description

Fee Paid

101	740	201	370	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) (\$)

## 2. EXTRA CLAIM FEES

Total Claims	<input type="checkbox"/>	-20** =	<input type="checkbox"/>	X	<input type="checkbox"/>	=	<input type="checkbox"/>
Independent Claims	<input type="checkbox"/>	-3** =	<input type="checkbox"/>	X	<input type="checkbox"/>	=	<input type="checkbox"/>
Multiple Dependent			<input type="checkbox"/>	=	<input type="checkbox"/>		

Extra Claims  
Fee from below  
Fee Paid

Large Entity Small Entity

Fee Code (\$)

Fee Code (\$)

Fee Description

103	18	203	9	Claims in excess of 20	
102	84	202	42	Independent claims in excess of 3	
104	280	204	140	Multiple dependent claim, if not paid	
109	84	209	42	** Reissue independent claims over original patent	
110	18	210	9	** Reissue claims in excess of 20 and over original patent	

SUBTOTAL (2) (\$)

\*\*or number previously paid, if greater; For Reissues, see above

## 3. ADDITIONAL FEES

Fee Code	Large Entity Fee (\$)	Small Entity Fee (\$)	Fee Description	Fee Paid
105	130	205	65 Surcharge - late filing fee or oath	
127	50	227	25 Surcharge - late provisional filing fee or cover sheet	
139	130	139	130 Non-English specification	
147	2,520	147	2,520 For filing a request for ex parte reexamination	
112	920*	112	920* Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840* Requesting publication of SIR after Examiner action	
115	110	215	55 Extension for reply within first month	
116	400	216	200 Extension for reply within second month	
117	920	217	460 Extension for reply within third month	
118	1,440	218	720 Extension for reply within fourth month	
128	1,960	228	980 Extension for reply within fifth month	
119	320	219	160 Notice of Appeal	
120	320	220	160 Filing a brief in support of an appeal	
121	280	221	140 Request for oral hearing	
138	1,510	138	1,510 Petition to institute a public use proceeding	
140	110	240	55 Petition to revive - unavoidable	
141	1,280	241	640 Petition to revive - unintentional	
142	1,280	242	640 Utility issue fee (or reissue)	
143	460	243	230 Design issue fee	
144	620	244	310 Plant issue fee	
122	130	122	130 Petitions to the Commissioner	
123	50	123	50 Processing fee under 37 CFR 1.17(q)	
126	180	126	180 Submission of Information Disclosure Stmt	
581	40	581	40 Recording each patent assignment per property (times number of properties)	
146	740	246	370 Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370 For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370 Request for Continued Examination (RCE)	
169	900	169	900 Request for expedited examination of a design application	
Other fee (specify) _____				
*Reduced by Basic Filing Fee Paid				
SUBTOTAL (3) (\$)				
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## SUBMITTED BY

Complete (if applicable)

Name (Print/Type)	Douglas E. McKinley, Jr.	Registration No. (Attorney/Agent)	40,280	Telephone	509-628-0809
Signature				Date	03/13/2003

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PATENT APPLICATION  
Attorney Ref. No. G-305

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Hetzler et al.

Serial No.: 09/365,342

Filed: July 30, 1999

For: METHOD AND APPARATUS FOR ENTITY RELATIONSHIP  
VISUALIZATION

Group Art Unit: 2672

Examiner: Havan, Thu Thao

ATTENTION: Board of Patent Appeals and Interferences  
Commissioner of Patents and Trademarks  
Washington, DC 20231

**Brief on Appeal**

Under 37 CFR § 1.192

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AND INTERFERENCES

This Brief on Appeal is in furtherance of the Notice of Appeal filed January 13, 2003. Appeal is taken from the Examiner's Office Action mailed September 17, 2002, finally rejecting claims 1-4, 6, 13-17, 20-22, and 25.

The fees required under 37 C.F.R. § 1.17 (c) are submitted in the accompanying fee sheet PTO/SB/17 submitted herewith. The Commissioner is hereby authorized to apply any additional fees required, or to make any credits due, to the undersigned's Deposit Account No. 502149.

This Brief is transmitted in triplicate.

This Brief contains the following items under the following headings, in the order set forth below.

## Table of Contents

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
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- V. SUMMARY OF INVENTION
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- VII. GROUPING OF CLAIMS
- VIII. ARGUMENT
- IX. APPENDIX

### **I. Real Party in Interest**

37 CFR § 1.192 (c) (1)

The United States Government.

### **II. Related Appeals and Interferences**

37 CFR § 1.192 (c) (2)

The Board's decision in the present Appeal will not directly affect, or be directly affected, or have any bearing on, any other appeals or interferences known to the appellant, or the appellant's legal representative.

### **III. Status of Claims**

37 CFR § 1.192 (c) (3)

Status of all the Claims:

1. Claims presented: Claims 1-25.

2. Claims withdrawn from consideration but not cancelled: None.
3. Claims cancelled: Claims 12, 23 and 24.
4. Claims pending: 1-11, 13-22, and 25 of which:
  - i. Claims objected to 5, 7-11, and 18-19
  - ii. Claims rejected 1-4, 6, 13-17, 20-22 and 25

All pending rejected claims, namely claims 1-4, 6, 13-17, 20-22 and 25, are being appealed. The appealed claims are eligible for appeal, having been finally (twice) rejected. If allowance is granted on the rejected claims, the Examiner's basis for objection with respect to claims 5, 7-11, and 18-19 will become moot, thereby rendering those claims allowable in their present form.

#### **IV. Status of Amendments**

37 CFR § 1.192 (c) (4)

Subsequent to the last Office Action mailed on September 17, 2002, which contained a final rejection of the appealed claims, no amendment has been filed.

#### **V. Summary of Invention**

37 CFR § 1.192 (c) (5)

The invention pertains to a method and apparatus that generally allows for “entity relationship visualization.” As such, the invention allows large quantities of data to be displayed on a computer screen or computer generated print-out in a manner that allows a human being viewing that computer screen or computer generated print-out to quickly and accurately perceive the nature of a plurality of relationships between various entities. The visualization provided by the present invention combines various methods of aggregation, such as representing relationships among clusters (including an option to represent the presence of at least one relationship or to show all relationships between clusters or entities thereof), and using thresholds for deciding presence of relationships. Relationships are preferably shown by mapping at least two entities on a surface, and

then connecting those entities with a plurality of strands, wherein each strand provides some information concerning the nature of the relationship between the two entities. The plurality of strands are described as “connectors,” and are designed to impart information concerning the nature of the relationship by varying the visual appearance of the individual strands in a manner which may be readily interpreted by a human being. For example, the strands may appear as different colors where each of the colors portrays a detail about types of relationships. Further, the strands may be displayed as “arcs” wherein the direction of the arc portrays a detail about the types of relationships.

Applications suggested for the invention include: Information Assurance: using specific computers as the entities, represent legitimate network or computer accesses as positive arcs and attempts at break-in as negative ones; Legal research: using court cases as entities, represent supporting relationships (e.g., decision upheld) as positive arcs, and contrary relationships (e.g., decision overturned) as negative ones; Medical: using symptoms as entities, represent symptoms that often appear together or have a cause-effect relationship as positive arcs and ones that do not appear together as negative ones.

The method and apparatus of the present invention allow for visualizing a relationship between at least two entities, by:

- (a) geometrically mapping at least two entities onto a surface;
- (b) providing a relationship record for each of the at least two entities;
- (c) generating a display of the two entities together with at least one connector between the two entities as visualizing the relationship from the relationship record; and
- (d) the connector having two ends connected to a pair of the two entities, the connector having an extension between the two ends, the extension passing out of the surface, the connector having a plurality of strands wherein each of the plurality of strands corresponds to each of a plurality of relationships.

Steps (a) and (b) are interchangeable. In the present invention, relationships include explicit relationships, implicit relationships and combinations thereof.

## **VI. Issues on Appeal**

37 CFR § 1.192 (c) (6)

Issue 1 - Whether claims 1, 14 and 15 are patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art (page 4, lines 10-12, hereinafter "prior art").

Issue 2 - Whether claim 2 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 3 - Whether claim 3 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 4 - Whether claim 4 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 5 - Whether claim 13 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 6 - Whether claim 16 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 7 - Whether claim 17 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 8 - Whether claim 20 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 9 - Whether claim 21 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 10 - Whether claim 22 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Issue 11 - Whether claim 25 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

## **VII. Grouping of Claims**

37 CFR § 1.192 (c) (7)

For each ground of rejection which appellant contests herein which applies to more than one claim, such additional claims, to the extent separately identified and argued below, do not stand or fall together.

## **VIII. The Argument**

37 CFR § 1.192 (c) (8)

The Examiner has finally rejected claims 1-4, 6, 12-17, and 20-25 under 35 USC 103(a) as being unpatentable over Prakriya et al. (US patent no. 6,154,220) in view of Eick et al. (US patent no. 5,835,085) and further in view of applicant's admitted prior art.

Issue 1 - Whether claims 1, 6, 14 and 15 are patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

Regarding claim 1, and claims 14 and 15 by virtue of dependency, the Examiner concedes that Prakriya fails to disclose a plurality of strands wherein each of said

plurality of strands corresponds to each of a plurality of relationships. The Examiner then asserts that Eick “specifically discloses” a plurality of strands wherein each of said plurality of strands corresponds to each of a plurality of relationships, citing column 2, lines 38-67; column 7, lines 5-22; and Fig.s 3, 4 and 6. The applicant respectfully disagrees.

As taught and shown by the applicant, a connector consisting of a plurality of strands are shown in the visual display, with a gap G between each strand (see Fig. 1, and accompanying description at page 6, lines 24-27). As claimed by the applicant, a plurality of such strands is used to connect entities mapped onto a visual display. Eick also maps “entities” onto a visual display. Eick refers to these entities as “nodes.” Eick also connects these nodes with “links” which may represent multiple forms of information (ie. Each of Eick’s links may represent several pieces of information). In contrast to the appellant’s claim 1, however, in all cases, Eick combines the information showing a single link between nodes (see Fig.s 3 and 6). While Eick may alter the color or and width of the links, the fact remains that Eick uses but a single link between nodes. As such, while each of Eick’s links may provide some information concerning the aggregate relationships for all of the stands, since they are combined into a single link, (or connector, to use the applicant’s nomenclature), Eick provides no means to visualize the various relationships symbolized by each individual strand.

The difference between the present invention and Eick can be further explained thusly. Since Eick relies on the optimization of the clustering of the nodes to provide visual information about a corpus, Eick’s invention is primarily an algorithm for optimizing the clustering of Eick’s nodes. While Eick does provide links between these nodes, and does provide some information concerning the relationships of those links with the use of color and width, Eick’s focus is not on providing the user a means to visualize all of the various relationships that might exist in a single link. Thus, when visually displaying each of these links, Eick combines all of the various relationships into a single line, termed a link. This is not intended to deprecate Eick’s method; rather,

Eick's method is simply directed at providing different information, and therefore employs a different strategy than the present invention.

The present invention allows the user to visualize the information consolidated by each of Eick's links, because in the present invention, each of the links are shown as a plurality of strands which are separately displayed to the user. In this manner, information concerning the underlying relationship for each strand is visually segregated from each other strand. Accordingly, Eick does NOT show or suggest the step of "said connector having a plurality of strands wherein each of said plurality of strands corresponds to each of a plurality of relationships."

In the Examiner's response to the applicant's paper filed June 12, 2002, the Examiner again contends that Eick "teaches a plurality of strands, wherein each of said plurality of strands corresponds to each of a plurality of relationships" and again refers to column 2, lines 38-67; column 7, lines 5-22; and Fig.s 3, 4 and 6. The appellant again contends that the referenced passages contain no such disclosure. Perhaps the Examiner is simply referring to the fact that Eick shows a plurality of "connectors" in the sense that Eick shows a plurality of "connectors" with each of said "connectors" connecting separate nodes. If so, the Board's attention is drawn to the language of step d) in claim 1 which requires a "connector having two ends connected to a pair of said at least two entities, said connector having an extension between said two ends, said extension passing out of said surface, said connector having a plurality of strands wherein each of said plurality of strands corresponds to each of a plurality of relationships." In other words, each pair of entities (or "nodes" to use Eick's nomenclature) of the present invention are connected by a "plurality of strands." In contrast, as discussed above, while Eick may show a "plurality of links" (since Eick shows a great many nodes), in Eick, each pair of nodes is connected by but a single line, and nowhere does Eick teach or suggest a plurality of links between any two nodes as is required by the appellant's claim 1.

Thus, the appellant's claims are limited to connections that show a "plurality of strands" between each of any two "entities." The Examiner has conceded that Prakriya

does not show this step. The prior art admitted in the applicant's disclosure does not show this step, and the Examiner has not asserted as such. As explained above, contrary to the Examiner's assertion, Eick also lacks this step, since Eick connects each entity (or "node" as Eick refers to them) as a single line. Lacking this teaching, the combination of Prakriya, Eick and the prior art does not, and cannot, provide disclosure necessary to form a *prima facie* case of obviousness under 35 USC 103(a). "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

Issue 2 - Whether claim 2 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

With respect to claim 2, claim 2 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 2 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant's disclosure, for the reasons given above, with respect to claim 1. The applicant would further note that contrary to the Examiner's assertion, Eick does NOT show "at least one of said plurality of strands pass[ing] out of said surface" as required by the appellant's claim 2, since Eick does not display a visual representation of ANY of the strands, as Eick has combined them into a single link. Further, the Examiner contends that in figure 3 of Eick, "the 'surface' as claimed is represented by the dot(s) (309), and the "extensions passing out of the surface" are represented by the connection links (307). The appellant is unsure how the Examiner has reached this conclusion. In figure 3 of Eick, each of the connectors is shown as a straight line. How the Examiner has imparted a three dimensional visualization to a straight line is unclear. On which side of the

surface do the “connection links” shown by Eick pass out of the surface, and how would a user tell? In contrast, the appellant has plainly shown curved strands of varying texture that are readily interpreted as having the third dimensionality necessary for determining which side they pass out of the surface, as required in the claim. The Examiner then states that some dots have “fanned out” connection links and that these “fanned out” connection links are representative of a plurality of strands passes out of said surface.” The appellant is again confused by this interpretation of the figure. Eick provides no support for such an interpretation in Eick’s text, as Eick makes no mention whatsoever of interpreting Eick’s connectors as having anything other than the two dimensions shown in the figure. It would appear that the three dimensionality that the Examiner has imparted to Eick’s figure exists only in the Examiner’s imagination. Plainly, it is not evidenced by the figure, and inarguably, it is not described in the specification. As such, Eick cannot possibly provide the basis for a *prima facie* case of obviousness under 35 USC 103(a) with respect to the limitation that “at least one of said plurality of strands passes out of said surface on one side of said surface and another of said plurality of strands passes out of said surface on an opposite side of said surface.”

Issue 3 - Whether claim 3 is patentable under 35 USC 103(a) over Prakriya et al ‘220 in view of Eick, et al ‘085 and further in view of the applicant’s admitted prior art.

With respect to claim 3, claim 3 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 3 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant’s disclosure, for the reasons given above, with respect to claim 1. The applicant would further note that contrary to the Examiner’s assertion, Eick does NOT show “a geometric gap between” each strand, as required by claim 3. The Examiner cites column 12, lines 25-57 as a reference toward this teaching, however, at this location Eick merely describes the algorithm Eick uses to place nodes, which has NO bearing on the visual representation of ANY of Eick’s connectors. Further, Eick cannot possibly show a

“geometric gap between strands”, as required in appellant’s claim 3, as in all cases, Eick has combined the strands into a single link. As such, Eick cannot possibly provide the basis for a *prima facie* case of obviousness under 35 USC 103(a).

Issue 4 - Whether claim 4 is patentable under 35 USC 103(a) over Prakriya et al ‘220 in view of Eick, et al ‘085 and further in view of the applicant’s admitted prior art.

With respect to claim 4, claim 4 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 4 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant’s disclosure, for the reasons given above, with respect to claim 1. The applicant would further note that contrary to the Examiner’s assertion, Prakriya does NOT teach each strand as having an “arc height” as Prakriya does describe the visual representation of ANY of the strands beyond Prakriya’s general description of plotting the nodes on a graph. The Examiner cites column 8, lines 25-47 as a reference toward this teaching, stating that “Prakriya discloses the layout surface arc for the nodes.” However, a close examination of the relevant description (line 32) reveals that the word “arc” is an obvious typographical error, and should be read as “are.” If the sentence is read using the word “arc,” it still does not support the Examiner’s position, because the sentence becomes meaningless. Accordingly, the applicant respectfully submits that with respect to the limitation that “each strand has an arc height” in claim 4, Prakriya cannot possibly provide the basis for a *prima facie* case of obviousness under 35 USC 103(a) 35 USC 103(a).

Issue 5 - Whether claim 13 is patentable under 35 USC 103(a) over Prakriya et al ‘220 in view of Eick, et al ‘085 and further in view of the applicant’s admitted prior art.

With respect to claim 13, claim 13 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim

13 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant's disclosure, for the reasons given above, with respect to claim 1. The Examiner again alleges that Eick teaches a plurality of strands, and now cites column 4., lines 29-48 and Fig.s 3 and 6 as support for this teaching. However, at column 4, lines 29-48, and in Fig. 3, as explained above, Eick collapses all of the strands into a single link, and does NOT show a "plurality" of strands as required by claim 13. Accordingly, Prakriya cannot possibly provide the basis for a *prima facie* case of obviousness for claim 13 under 35 USC 103(a) 35 USC 103(a).

Issue 6 - Whether claim 16 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

With respect to claim 16, claim 16 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 16 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant's disclosure, for the reasons given above with respect to claim 1. The Examiner comments that Prakriya "discloses the rectilinear layout system positioning the nodes so that the center node is at the center of the layout surface." However, Claim 16 is not directed towards "positioning the nodes," Claim 16 is directed towards positioning the display. Accordingly, Claim 16 is readily distinguished from Prakriya because while Prakriya may provide a method for positioning the nodes within the display, Prakriya provides no teaching of altering the orientation of the display itself as required by claim 16. Prakriya cannot therefore provide the basis for a *prima facie* case of obviousness with respect to claim 16 under 35 USC 103(a) 35 USC 103(a).

Issue 7 - Whether claim 17 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

With respect to claim 17, claim 17 is dependent from claim 16, which is dependent from claim 1, and therefore incorporates all of the limitations of claims 1 and 16 by virtue of dependency. Accordingly, claim 17 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant's disclosure, for the reasons given above with respect to claims 1 and 16. The Examiner comments that Eick "teaches positioning is selected from the group consisting of rotate, pan, zoom and combinations thereof." In the first instance, Eick does not teach panning, rotating or zooming the display. Eick merely discloses a separate view of a detailed section of Eick's graph, as opposed to positioning the display. Accordingly, Claim 17 is readily distinguished from Eick because while Eick may provide a method for viewing a detailed section of the display, Eick provides no teaching of altering the orientation of the display itself. Eick cannot therefore provide the basis for a *prima facie* case of obviousness with respect to claim 17 under 35 USC 103(a) 35 USC 103(a).

Issue 8 - Whether claim 20 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

With respect to claim 20, claim 20 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 20 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant's disclosure, for the reasons given above with respect to claim 1. The Examiner comments that Eick "teaches a user action may cause the display of all relationships corresponding to a given relationship type" and asserts that Eick "discloses the user selects a variety of computations, which rearrange the graph so that nodes with significant relationships are grouped together." However, Claim 20 is not directed towards "grouping nodes," to emphasize or de-emphasize relationships, Claim 20 is directed towards removing the visual representation of selected relationship types in their entirety. Accordingly, Claim 20 is readily distinguished from Eick because while Eick may provide a method for positioning the nodes within the display to emphasize or de-

emphasize certain relationships, Eick provides no teaching of removing certain relationship types from the visual display altogether. Eick cannot therefore provide the basis for a *prima facie* case of obviousness with respect to claim 20 under 35 USC 103(a) 35 USC 103(a).

Issue 9- Whether claim 21 is patentable under 35 USC 103(a) over Prakriya et al ‘220 in view of Eick, et al ‘085 and further in view of the applicant’s admitted prior art.

With respect to claim 21, claim 21 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 21 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant’s disclosure, for the reasons given above with respect to claim 1. The Examiner comments that Prakriya “teaches a directionality of a relationship [as] indicated by line type” and asserts that in Fig. 7B, Prakriya “the connector displays the relationship between record A and Record B to H.” However, in Fig. 7B, Prakriya merely shows a solid black line connecting different boxes. It is thus clear that Fig. 7B does not show different lines types corresponding to different directions in the relationships. Accordingly, Claim 21 is readily distinguished from Eick, and Eick cannot provide the basis for a *prima facie* case of obviousness with respect to claim 21 under 35 USC 103(a) 35 USC 103(a).

Issue 10- Whether claim 22 is patentable under 35 USC 103(a) over Prakriya et al ‘220 in view of Eick, et al ‘085 and further in view of the applicant’s admitted prior art.

With respect to claim 22, claim 22 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 22 is distinguished from the combination of Prakriya and Eick, and the prior art admitted

in the applicant's disclosure, for the reasons given above with respect to claim 1. The Examiner comments that Eick "teaches user action may cause the display of either a single strand, aggregate strand, or multitextured strands", and asserts that this is shown in Fig.s 3 and 6. As previously argued, Eick in fact only shows an aggregate, and, as such, does not show a single strand or multitextured strands. The Examiner has then argued that claim 22 is claiming "either a single strand, an aggregate strand or multitextured strand" and therefore any of the three meet the criteria. However, the claims requires that "a user action may cause the display of either a single strand, aggregate strand, or multitextured strands." Accordingly, claim 22 in fact requires that all three of the various displays be at least possible ("may cause"), thus distinguishing the claim from the teaching of Eick, which does not show wither a single strand or a multitextured strand. Accordingly, Claim 22 is distinguished from Eick, and Eick does not provide the basis for a *prima facie* case of obviousness with respect to claim 22 under 35 USC 103(a) 35 USC 103(a).

Issue 11- Whether claim 25 is patentable under 35 USC 103(a) over Prakriya et al '220 in view of Eick, et al '085 and further in view of the applicant's admitted prior art.

With respect to claim 25, claim 25 is dependent from claim 1 and therefore incorporates all of the limitations of claim 1 by virtue of dependency. Accordingly, claim 25 is distinguished from the combination of Prakriya and Eick, and the prior art admitted in the applicant's disclosure, for the reasons given above with respect to claim 1. The Examiner comments that Prakriya "teaches mapping by two-way document/topic iteration logic", and asserts that this is shown in column 14, lines 58-67; and column 19, lines 5-19. The Applicant respectfully disagrees. The Prakriya reference is concerned with mapping information which "defines databases, computer networks, and object based systems." (see abstract). As such, the Prakriya reference is entirely silent concerning docment/topic relationships, and is entirely lacking any discussion whatsoever concerning two-way document/topic iteration logic. The discussion of iteration in Prakriya referenced by the

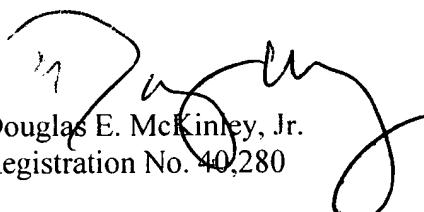
Examiner is related to a globally specified parameter, the ListofHueristics, that are predetermined parameters to determine the focus mode. In contrast, two-way document/topic iteration logic utilizes no such predetermined parameters. Rather, the parameters are derived from the documents/topics themselves. Accordingly, Claim 25 is readily distinguished from Prakirya, and Prakirya cannot provide the basis for a *prima facie* case of obviousness with respect to claim 21 under 35 USC 103(a) 35 USC 103(a).

### **Conclusion**

For the extensive reasons advanced above, Appellant respectfully by forcefully contends that each claim is patentable. Therefore, reversal of all rejections is courteously solicited.

To the extent necessary, a petition for extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 502149 and please credit any excess fees to such deposit account.

Respectfully Submitted,

  
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**IX. Appendix to Brief on Appeal**  
37 CFR § 1.192 (c) (9)

Attorney Ref. No. G-305

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Hetzler et al.

Serial No.: 09/365,342

Filed: July 30, 1999

For: METHOD AND APPARATUS FOR ENTITY RELATIONSHIP  
VISUALIZATION

Group Art Unit: 2672

Examiner: Havan, Thu Thao

**Claims:**

**CLAIMS**

1. A method of visualizing a relationship between at least two entities, having the steps of:
  - (a) mapping the at least two entities onto a surface;
  - (b) providing a relationship record for each of the at least two entities;
  - (c) generating a display of the at least two entities together with at least one connector between the at least two entities for said visualizing said relationship from said relationship record; and
  - (d) said connector having two ends connected to a pair of said at least two entities, said connector having an extension between said two ends, said extension passing out of said surface, said connector having a plurality of strands wherein each of said plurality of strands corresponds to each of a plurality of relationships.

2. The method as recited in claim 1, wherein at least one of said plurality of strands passes out of said surface on one side of said surface and another of said plurality of strands passes out of said surface on an opposite side of said surface.

3. The method as recited in claim 1, wherein said each strand is distinguished from other strand(s) by a geometric gap therebetween.

4. The method as recited in claim 3, wherein said each strand has an arc height.

5. The method as recited in claim 4, wherein a missing strand is observed as a greater gap between remaining strands.

6. The method as recited in claim 1, wherein said each strand is further distinguished with a texture.

7. The method as recited in claim 6, wherein said texture is selected from the group consisting of line type, line weight, color, display frequency, and combinations thereof.

8. The method as recited in claim 7, wherein said line type is selected from the group consisting of solid, and broken.

9. The method as recited in claim 8, wherein said broken is selected from the group consisting of dashed, dotted, hashed, and combinations thereof.

10. The method as recited in claim 7, wherein said color is a frequency within the visible spectrum.

11. The method as recited in claim 7, wherein said display frequency is a pulsed display.

12. (cancelled) The method as recited in claim 1, wherein said plurality of strands is displayed as a single strand.

13. The method as recited in claim 1, wherein said plurality of strands is displayed as said plurality of strands.

14. The method as recited in claim 1, wherein said at least two entities are clusters of members, said clusters having centroids, and said connector connects said centroids.

15. The method as recited in claim 14, wherein substrands extend from each of said members to said connector connecting said centroids.

16. The method as recited in claim 1, further comprising the step of positioning said display.

17. The method as recited in claim 16, wherein said positioning is selected from the group consisting of rotate, pan, zoom and combinations thereof.

18. The method as recited in claim 2 wherein the strands shown on one side of the surface indicate values exceed an upper threshold of a test and the strands on the other side of the surface indicate values lower than a low threshold for said test.

19. The method as recited in claim 18 wherein a change in either or both of said threshold value(s) causes strands to appear or disappear.

20. The method as recited in claim 1, wherein a user action may cause the display of all relationships corresponding to a given relationship type.

21. The method as recited in claim 1 wherein a directionality of a relationship is indicated by line type.

22. The method as recited in claim 1, wherein a user action may cause the display of either a single strand, aggregate strand, or multitextured strands.

23. (cancelled) The method as recited in claim 1, wherein each "dot" is a cluster of multiple entities.

24. (cancelled) The method as recited in claim 23, wherein a user action may cause a display of cluster to cluster strands, cluster to entity strands, or entity to entity strands.

25. The method as recited in claim 1, wherein said mapping is by two-way document/topic iteration logic.